ATTACHMENT 1
INTRODUCTION

1.1 BACKGROUND

In accordance with 40 CFR 270.65, and Utah Hazardous Waste Management Rules in Utah Administrative Code R-315-3-22, this Resource Conservation and Recovery Act (RCRA) Research, Development, and Demonstration (RD&D) permit application addresses the U.S. Army's Munitions Management Device, Version 1 (MMD-1), which is a transportable treatment system designed for detoxifying chemical warfare materiel (CWM) contained in non-explosively configured, non-stockpile chemical weapons.

The MMD-1 is a trailer-mounted, remotely operated treatment system consisting of the following components: munition loading and breaching system; reagent-processing system; liquid processing system; high pressure wash system; liquid waste system; gas-processing system, waste-gas system, and relief system; trailer heating, ventilation, and air conditioning system including a carbon filtration system used to purify air vapors leaving the process trailer; and utility systems that support the process systems.

Also associated with the MMD-1 system are the Munition Service Magazine (MSM), the Unpack Area (UPA), and three, less than 90 day waste storage areas. The MSM will be used to store munitions before processing in the MMD-1; the UPA will be used to unpack munitions for processing and to prepare the processed munition bodies for recycling/reclamation; and the less than 90 day waste storage areas will be used to store MMD-1 process wastes pending shipment offsite to a permitted treatment, storage, and disposal facility (TSDF) for further treatment and/or ultimate disposal.

The Program Manager Chemical Demilitarization (PMCD) has been designated as the single agency within the U.S. Department of Defense (DoD) to destroy all chemical warfare-related materiel. The destruction of CWM that is part of the main chemical weapons stockpile is the responsibility of the Project Manager for Stockpile Chemical Materiel (PMSCM). The destruction of all other non-stockpile CWM, to include chemical weapons recovered from burial sites, ranges, or other areas, is the responsibility of the Project Manager for Non-Stockpile Chemical Materiel (PMNSCM). The MMD-1 has been designed and constructed to support the PMNSCM mission.

PMNSCM will test the MMD-1 at U.S. Army Dugway Proving Ground (DPG), Utah. DPG was selected as the test site because of the availability of existing indoor test facilities and because DPG has recovered CWM that can be used to test the MMD-1. The MMD-1 will be located inside Building 3445 at DPG and will be operated by the PMNSCM Small Burials Contractor (SBC). DPG will also coordinate and provide support services to PMNSCM during the MMD-1 test program.

Building 3445 is a complex consisting of environmental test chambers, support structures, and equipment for testing chemical agents and industrial chemicals. It consists of two test chambers,

the East Chamber and the West Chamber. The two chambers are located side by side, are equally equipped, share a common design and construction (stainless steel walls and floors with a ventilation system designed to capture chemical agent), and have the same dimensions (approximately 34 feet wide by 65 feet long and 15 feet high). Both chambers will be used for the test activities. The East and West Chamber will house the MMD-1 system equipment. The West Chamber will also be used to store reagent product and contain a less than 90 day waste storage area. **Figure 1-1** shows the MMD-1 equipment layout at Building 3445.

The MMD-1 system will be tested using recovered non-stockpile CWM, reconfigured stockpile CWM, and Department of Transportation (DOT) cylinders containing nerve agents isopropyl methylphosphonofluoridate (GB), O-ethyl S-(2-diisopropylaminoethyl) methylphosphonothioate (VX), mustard (H) and distilled mustard agent (HD), and the industrial chemical phosgene. The CWM items selected for use in the MMD-1 test will be stored prior to processing in the MSM, a portable storage structure. The MSM will be located at the southeast corner of Building 3445 adjacent to the Building 3445 East Chamber. The MSM is permitted under this RD&D permit, as storage of the CWM is incidental to treatment. Post-treatment wastes and other MMD-1 process wastes will be temporarily stored in less than 90 day storage areas pending shipment offsite to a permitted commercial TSDF for further treatment and/or ultimate disposal. Less than 90 day waste storage areas will be located in the Unpack Area, the West Chamber of Building 3445, and southeast of Building 3445 on AA@ Street (see **Figure 1-1**). Hazardous wastes stored in less than

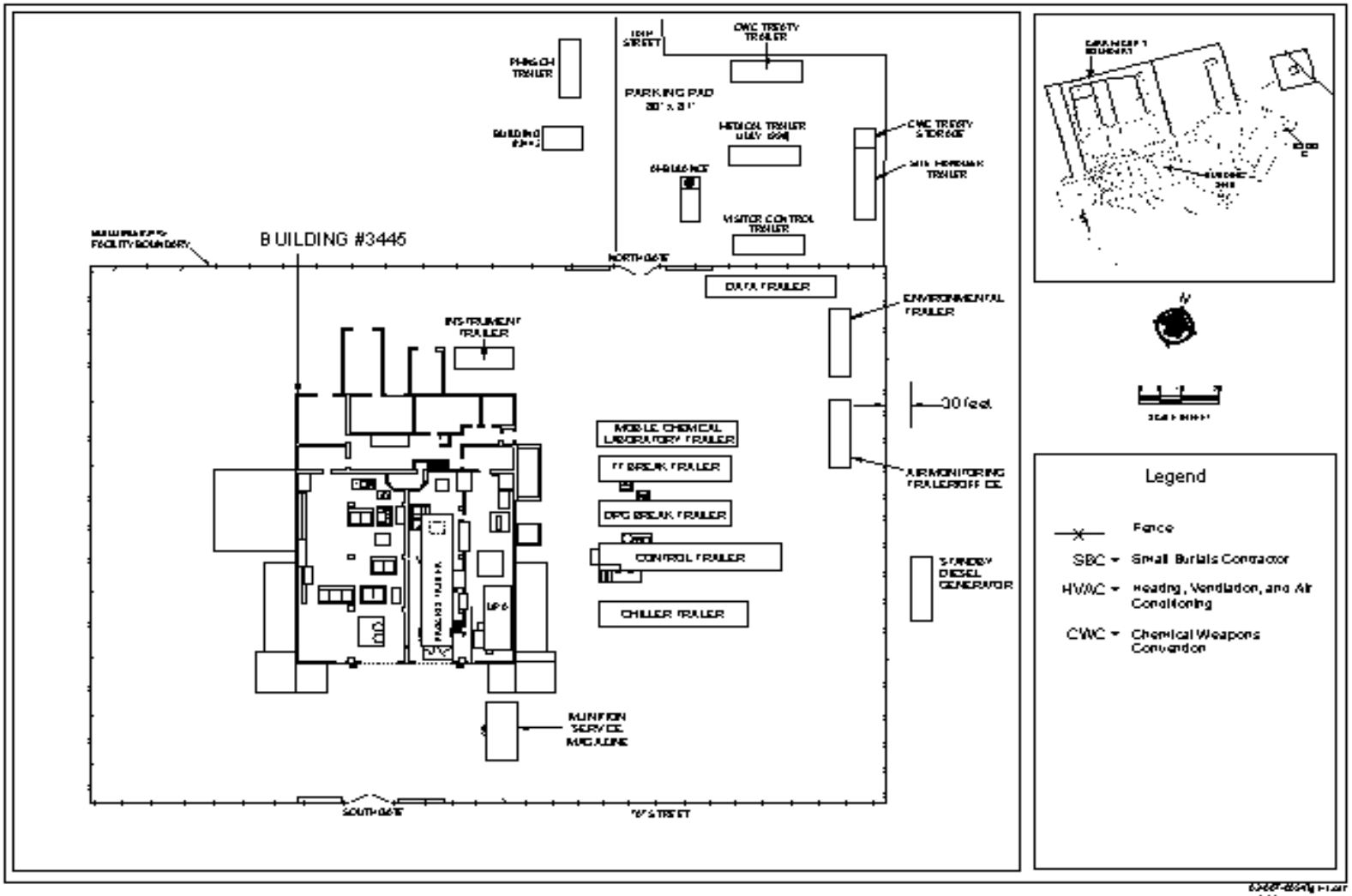

Figure 1-1. MMD-1 Equipment Layout at Building 3445

90 day storage areas do not require a RCRA permit and will be managed according to generator requirements of R315-5-10 (40 CFR 262.34). Therefore, these areas are not discussed in detail in this permit application.

1.2 PURPOSE OF THE RESEARCH, DEVELOPMENT, AND DEMONSTRATION PROJECT

The PMNSCM mission manages the following non-stockpile categories: buried CWM, recovered CWM, binary chemical weapons, miscellaneous CWM, and former chemical weapon production facilities. The MMD-1 will be used to treat (detoxify) chemical agent contained in non-explosively configured recovered CWM and buried CWM. Buried CWM is categorized by the following four types of sites: burial sites containing chemical agent identification sets (CAIS), small-quantity burial sites with non-explosively configured CWM, small-quantity burial sites with explosively configured CWM, and large-quantity CWM burial sites (with and without explosives).

The DoD intends to develop site characterization, excavation, removal, and treatment methods and procedures for CWM associated with each burial site type. Once tested and proven ready for operation, the MMD-1 will be used to treat (detoxify) non-explosively configured CWM from small-quantity burial sites or range-recovered CWM from large-quantity CWM burial sites.

Also, during testing of the MMD-1 system, PMNSCM will confirm gathered data against laboratory bench-scale study results which indicate that the resultant chemical agent neutralent wastes are reduced in toxicity. The waste streams generated during the MMD-1 test will be packaged, transported, and handled in accordance with existing DOT requirements, similar to other non-acutely hazardous wastes, and will be transported to and safely handled at an offsite permitted commercial TSDF for further treatment and ultimate disposal.

1.3 DETERMINATION OF ELIGIBILITY

In a letter dated 22 June 1994, U.S. Army Chemical Demilitarization and Remediation Agency (USACDRA), formerly the U.S. Army Chemical Materiel Destruction Agency, currently PMCD, received a determination from the State of Utah Division of Solid and Hazardous Waste concurring that an RD&D permit application was the preferred permitting approach for testing the MMD-1.

1.4 SPECIFIC RESEARCH OBJECTIVES

There are two developmental goals and one operational goal for the MMD-1 test. The developmental goals are: 1) to demonstrate the capability of the MMD-1 design to load, breach, and detoxify to performance goals, various types of chemical agents, industrial chemicals, and weapon configurations and 2) to collect process information, including temperatures, pressures, flow rates, flow levels, other process parameters, and treatment residue analyses to compare with existing laboratory bench-scale detoxification data. The operational goal of the MMD-1 test is to

demonstrate that the MMD-1 system can be safely operated and maintained using the provided procedures and equipment.

1.5 WHY THE PROPOSED ACTIVITY IS EXPERIMENTAL AND INNOVATIVE

Testing the MMD-1 is experimental and innovative because detoxifying recovered CWM has not been conducted using the proposed reagents in a remotely operated transportable system. Also, to date, detoxification data for the proposed reagents have been obtained only from laboratory tests.

1.6 DOCUMENT ORGANIZATION

This RD&D permit application was prepared according to the U.S. Environmental Protection Agency (EPA) *Guidance Manual for Research, Development, and Demonstration Permits Under 40 CFR Section 270.65*, EPA/530-SW-86-008, July 1986, and consists of 13 sections. The following list summarizes the information contained in Sections 2 through 13:

- Attachment 1 - Appendix A provides a general description of the location of the MMD-1 test, topography, and land use.
- Attachment 3 describes the overall security measures at DPG and at Building 3445 to control access and prevent unauthorized entry.
- Attachment 4 describes the characteristics of the wastes and product materiel that will be treated by the MMD-1. This section also presents the waste analysis plan, which promotes and ensures safe hazardous waste management practices.
- Attachment 11 presents specific design and process information for the MMD-1 and the monitoring strategy.
- Attachment 5 presents the types and frequencies of inspections that will be conducted to ensure safe and proper operation of the MMD-1 and to prevent hazards to human health and the environment.
- Attachment 7 describes the procedures, equipment, and structures in the MMD-1 and Building 3445 to help prevent and to respond to environmental or human health hazards related to the MMD-1 test.
- Attachment 2 presents the MMD-1 test plan strategy.
- Attachment 1 - Appendix B provides information relating to environmental performance standards for miscellaneous units, including descriptions of how the MMD-1 is designed, operated, maintained, and closed in a manner that ensures protection of human health and the environment.

- Attachment 8 addresses emergency actions to protect human health, the environment, facilities, and equipment in the event of an emergency originating from or affecting the MMD-1.

- Attachment 9 presents the closure plan for the MMD-1 and identifies the steps that will be necessary to close the MMD-1 at the end of the test program.

- Attachment 6 presents the training program for MMD-1 test personnel.

DPG was issued a RCRA permit from the State of Utah in 1993 for operations at the Central Hazardous Waste Storage Facility (CHWSF) and the F999 Container Storage Building (located at the CHWSF). DPG submitted permit modifications to the State of Utah in February 1993 to cover operations at Igloo G, where the CWM at DPG is stored, and in April 1995 for the storage areas at the CHWSF. In September 1993, DPG submitted a revised permit application for open burning/open detonation areas. Because the MMD-1 test will be conducted at DPG, sections of this permit application contain and refer to applicable excerpts from the DPG RCRA permit for the CHWSF and the DPG RCRA permit application for the open burning/open detonation areas that describe detailed information pertaining to facility description, emergency preparedness, support service, and site characteristics.